# An Easy to Use Tool for Creating and Maintaining User Dialogs

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## INTRODUCTION

Before any clinical information system can gain sustained end-user support, the information systems (IS) staff must be able to respond rapidly to user suggestions for modifications in the user interface. Many user interfaces in healthcare data gathering applications can be reduced to a dialog consisting of a series of simple questions and/or data input requests involving a limited number of question formats. For example, in pediatrics, charting the physical exam findings from a well-baby visit can take the form of a list of yes/no questions. In another setting, a physician might use a series of multiple choice questions to create a routine medication order. Finally, an admitting clerk could use a series of "fill-in-the-blank" questions to register a patient. The questions and forms can change frequently, as clinical and administrative work patterns change. These user interface modifications can swamp the IS programming staff.

We have developed an easy-to-use interface development tool which transfers minor user interface maintenance tasks to the clinical end-users. The tool allows authorized users to make changes in an attractive, modern interface format, without waiting for programmer time. Some of our applications appear in both a native Windows format and a Web browser-based version. The dialog tool facilitates synchronization as the content and/or functionality changes. The poster describes our work to create this easy-to-use tool for creation, display, and maintenance of flexible user dialogs.

## DESIGN CONSIDERATIONS

We sought to develop a user interface dialog editor with the following requirements:

1. Be easy to use by non-programming personnel;
2. Allow the creation and editing of new questions and changes to their appearance and location within the dialog;
3. Generate executable output for Hyper-M, Visual Basic (VB), and HyperText Markup Language (HTML).

## SYSTEM DESCRIPTION

The dialog tool is divided into two parts. The first part handles the individual questions that make up the dialog. The second part handles the dialogs.

The individual questions are maintained in a MUMPS database. An editor allows dialog developers to create and edit questions from the database. Answers to questions are divided into types, depending on whether the response is chosen from a controlled vocabulary or is entered as freetext. Within each of these categories there are two question sub-types, single and multiple response.

The dialogs, which are simply ordered lists of questions, are also maintained in MUMPS. An editor allows developers to create, edit, reformat and delete unused dialogs from the database.

Once a dialog's content has been defined, the developer formats it using the dialog display editor. Options exist to allow the user to a) establish the order of the questions within the dialog, b) make the answer to a question required, c) choose the specific control used for the question (e.g., radio button or check box, a default is always provided), and d) adjust visual parameters such as justification and alignment.

Once the dialog is defined to the users' specifications, the developer chooses the final display format. We currently can create dialogs that will be displayed in Hyper-M, Visual Basic, and HTML.

## FORMATIVE EVALUATION

We created a database of 3394 questions derived from the DXplain[1] knowledge base. From this database we designed several dialogs, each of which may be displayed in VB, Hyper-M, and HTML formats.

## CONCLUSION

An easy-to-use dialog development tool has been created. It allows users with no programming experience to create and maintain visually appealing user interface dialogs in VB, HTML, and Hyper-M.

[1] JAMA 258(1):67-74;1987.

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